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ABSTRACT
                Two experiments examining the "distinctiveness of
encoding" hypothesis are reported. The hypothesis suggests that
specific forms of processing of events may result in the formation of
more exact perceptual descriptions and thus more distinctive records
in memory. The two experiments reported address shortcomings in
previous research on distinctiveness by comparing various forms of
distinctiveness and their effectiveness in long-term recall. In one
experiment, subjects were given one of four forms of data on 20
specific words: (1) the word, its definition, a word link for
memorability, and the word link used in a sentence; (2) the word,
definition, and the request to use the word in a sentence; (3) the
word and definition; and (4) the words to be learned and their
definitions, scrambled. The fourth condition was the distinctive one.
After 20 minutes, a multiple-choice test was given. The first three
groups performed significantly better than the fourth group. In the
second experiment, the same subjects were asked to retake the earlier
multiple-choice test without the earlier preparation. The same
results were obtained. It is concluded that a distinctive, unfamiliar
form of processing words may require additional learning time or may
result in limited recall. Further research is recommended to examine
the role of greater processing time, prior knowledge, and individual
processing rapidity. (MSE)

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DISTINCTIVENESS OF ENCODING AND WORD LEARNING:
FORMS OF "DISTINCTIVENESS" AND RETENTION OF VOCABULARY WORDS

by

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ABSTRACT

The "distinctiveness of encoding" paradigm which recently stemmed

from the "levels of processing" perspective has been successfully

employed in prose/textual materials. Two experiments were conducted

to ascertain the most viable form of "distinctiveness" in word learning

and to ascertain its relative effectiveness in both short and long

term recall.

3

Since the inception of the "levels of processing" paradigm by Craik and Lockhart in 1972, this perspective has undergone several changes. Jacoby and Craik (1979) and Jacoby, Craik and Begg (1979) have offered a "distinctiveness of encoding" hypothesis. This suggests that specific forms of processing events may result in the forming of more.exact perceptual descriptions and thus, more distinctive records in memory. This perspective has been examined by Glover, Plake, Roberts, Zimmer and Palmere (1981) with prose materials wherein subjects were required to paraphrase and draw inferences and were given idea unit (Meyer, 1975) recall tests. Further research by Glover, Plake and Zimmer (1982) further examined the distinctiveness notion utilizing higher order objectives stemming from Bloom's taxonomy of educational objectives (Bloom, Englehart, Furst, Hillard, Krathwohl, 1956). Later, viewing distinctiveness as decisions regarding to-be-learned materials and the difficulty of those decisions, Benton, Glover, and Bruning (1983) investigated 1) the number of decisions, 2) placement of decisions in paragraphs and concluded that recall is increased as the number of decisions increased. Benton, Glover, Monkowski and Shaughnessy (1983) further investigated the decision perspective in terms of good and poor readers, the difficulty and context of decisions and ascertained that both levels of questions and levels of difficulty directly influence recall.

Further, elaboration of processing and "spread" of processing was additionally seen (Craik and Tulving, 1975) to further memory and recall. One form of "distinctiveness" seen to be facilitative of learning was researched by Glover, Bruning and Plake (1982). Glover, et. al. utilized scrambled summary sentences which required rearranging to facilitate recall.

There have been several weaknesses in "distinctiveness" studies. First, most studies have been short-term in nature emphasizing immediate recall. Secondly, no studies have compared "distinctiveness" with other "deep processing" techniques or semantic techniques. Third, there have been no studies which utilized words and word learning; most studies have either utilized prose materials or recognition protocols.

In order to address these shortcomings, two experiments were conducted in order to ascertain 1) the effectiveness of various forms of "distinctiveness," and 2) the efficacy of these various forms in long term recall.

EXPERIMENT 1

METHOD

Subjects and setting: Subjects were 100 undergraduate volunteers enrolled in introductory psychology courses. They participated in the study for course credit. All data were collected in a large college classroom under optimal conditions.

Materials: Words taken from Funk and Tarshis (1982) were utilized as the to-be-learned materials. Four conditions were employed. The first condition gave students the word to be learned, it's definition, a word link to enhance memorability and the word link was utilized in a sentence. An example follows:

> Bibulous - readily taking up fluids or moisture; inclined to drink.
> Word Link: Bib
> The alcoholic drank so much that his friends considered putting a bib on him to keep his shirt dry.

In the second condition, the subjects were given the word to be learned, it's definition, and were then asked to use the word in a sentence. Space was provided for this. The third condition was

essentially a control group. Subjects were simply given the word and
its definition. The final condition employed a "distinctive" treatment
in that the definitions of the to-be-learned words were "scrambled"
in a random fashion. Subjects were requested to unscramble them into
a meaningful definition and to write the definition. Space was
provided for this. The same twenty words were utilized in all four
conditions. Twenty minutes were allowed for the learning of the words.

Procedure: At the beginning of the experimental session, students were
given folders containing directions, the to-be-learned words and an
IBM form for answering test questions at the end of the study period.
At the end of the twenty minutes, the to-be-learned words were removed
and a multiple choice test was given.

Results and Discussion: The table below shows the means and standard
deviations for each of the four groups.

	Group 1	Group 2	Group 3	Group 4
$\overline{X}$	18.96	17.89	18.93	12.07
S.D.	1.48	2.18	1.26	3.41
N =	28	28	27	27

An analysis of variance was utilized which resulted in an F (3,109) -
53.28, p :0001.

Significant differences were observed between groups. Post hoc
analysis utilizing Scheffe's test revealed that groups A, B, and C were
not significantly different, but that each was superior to D. Thus, the
semantic, word link and control groups performed significantly better
(p = .05) than the "distinctive" condition.

6

EXPERIMENT 2

METHOD

Subjects and setting: Subjects were the same subjects used in Experiment 1. However, as some had dropped the course and others were ill, only 98 participated in the second experiment. They received course credit for their participation in this follow-up part of the experiment. The setting was the same as Experiment 1.

Materials: The same multiple choice test was employed one month after the original experiment.

Procedure: The subjects were simply asked to re-take the test that thye had taken a month earlier. An IBM form was utilized for the machine scoring of the answers.

Results and Discussion: The table below shows the means and standard deviations for each of the four groups.

	Group 1	Group 2	Group 3	Group 4
X	17.16	15.29	17.79	11.04
S.D.	3.07	3.45	2.65	3.73
M	25	24	24	25

An analysis of variance was utilized which resulted in an $F_{(3,97)} = 20.86$, $p < .0001$.

Scheffe po.: hoc analysis again indicated that groups A, B, and C were not significantly different but that each was again, superior to D. Thus, the results of Experiment 1 were again replicated in Experiment 2.

General Discussion

It appears that "distinctive" processing relative to words may require additional time for learning. Traditional forms of word learning

7

may be associated with a lengthy past history of use and this may be more
effective. Requiring students to change their processing strategies may
result in frustration and limited recall. In addition, the unfamiliar
processing tasks of juxtaposition may also have required additional time
and may have interfered with the learning process. Further research
appears necessary relative to several issues in the "distinctiveness"
realm. First, additional time for processing may result in greater short-
term and long-term gains. Secondly, prior knowledge of words and verbal
fluency may be an aliatoric variable. Finally, rapid processors may have
an advantage over slow processors. In addition, subjects' sequential and
simultaneous processing skills may also be functional in word learning.
In sum, the "distinctiveness" paradigm and its alternative form may be a
fertile alternative to rote learning. Future research may clarify some of
the aforementioned issues.

REFERENCES

Benton, S. L., Glover, J. A., & Bruning, R. H. Levels of processing:
Effect of number of decisions on prose recall. Journal of Educa-
tional Psychology, 1983, 75, 382-390.

Benton, S. L., Glover, J. A., Monkowski, P. G. & Shaughnessy, M. F.
Decision difficulty and recall of prose. Journal of Educational
Psychology, 1983, 75, 727-742.

Bloom, B. S., Engelhart, M. D., Furst, F. J., Hill, W. H., &
Krathwohl, D. R. Taxonomy of educational objectives: Cognitive
domain. New York: McKay, 1956.

Craik, F. I. M. & Lockhart, R. S. Levels of processing: A framework
for memory research. Journal of Verbal Learning and Verbal
Behavior, 1972, 11, 671-684.

Craik, F. I. M. & Tulving, E. Depth of processing and the retention
of words in episodic memory. Journal of Experimental Psychology
General, 1975, 104, 268-294.

Funk, P. & Tarshis, B. Word memory power in thirty days. New York:
Delacorte Press, 1981.

Glover, J. A., Plake, B. S., Roberts, B., Zummer, J. W., & Palmere, M.
Distinctiveness of encoding: The effects of paraphrasing and
drawing inferences on memory from prose. Journal of Educational
Psychology, 1981, 73, 736-744.

Glover, J. A., Plake, B. S. & Zimmer, J. A. Distinctiveness of
encoding and memory for learning tasks. Journal of Educational
Psychology, 1982, 74, 189-198.

Glover, J. A., Bruning, R. H. & Plake, B. S. Distinctiveness of
encoding and recall of text materials. Journal of Educational
Psychology, 1982, 74, 522-534.

Jacoby, L. ., Craik, F. I. M., & Begg, I. Effects of decision
difficulty on recognition and recall. Journal of Verbal Learning
and Verbal Behavior, 1979, 18, 585-600.

Jacoby, L. L., & Craik, F. I. M. Effects of elaboration of processing
at encoding and retrieval: Trace distinctiveness and recovery of
initial context. In L. S. Cermak and F. I. M. Craik, (Eds.)
Levels of processing in human memory. Hillsdale, New Jersey:
Lawrence Erlbaum, 1979.

Meyer, B. J. F. The organization of prose and its effects on memory.
Amsterdam: North/Holland, 1975.